Both focus groups and quantitative telephone surveys were used in market assessment activities

Phase I   Phase II

*Focus
Groups*

*Quantitative
Telephone
Surveys*

• Three sessions were conducted:
  – Chicago (2)
  – Washington (1)
 	
• Participants were screened for usage of laptop/palmtop PCs or electronic personal organizers
	• 800 households nationwide
	
	• Random digit dialing to ensure statistically accurate coverage of households
	
	• Sample was stratified on the basis of income
	
	• Results were statistically weighted to provide projectable picture of results

Arthur D Little

Focus Groups

Information Collected

• Occupation/organization
• Uses made of laptop/palmtop PCs and electronic organizers
• Use of cellular and paging services
• Need for data communications/messaging support while away from office
  – Real-time vs. messaging
  – Activities supported while mobile
  – Amount of information which needs to be sent/ received
	• Brainstorming "ideal" capabilities for mobile office
	  – Where needed
	  – Portable- vs. vehicle-based needs
	  – Applications
	• Comparison of NWN vs. other services without pricing
	  – Skytel with Skystream capability
	  – Data over cellular
	  – RAM/ARDIS-type capabilities
	• Comparison of NWN vs. other services with pricing
	• Reaction to NWN concept

Arthur D Little

Household Surveys

Survey Information Collected

- Use of personal computers at home/work
  - Applications
  - E-mail usage (number/length of messages)
- Use of laptop/palmtop PC
- Use of electronic personal organizer
- Fax usage per week
- Percentage of time spent away from workplace for business
- Travel out of metropolitan area
- Interest in subscribing to portable messaging service at $60/ $75 / $90 per month (split sample test)
  - Now
  - Within five years

- Likely incoming and outbound message traffic using the service
- Typical incoming and outbound message length
- Extent to which local, regional and national coverage will meet needs
- Current use of cellular and paging services
- Demographics
  - Occupational category
  - Marital status
  - Number in household
  - Education income

Arthur D Little

Findings from focus groups are not statistically representative but provide working hypotheses regarding:

- Underlying needs of users

- Key characteristics of ideal systems

- Comparative positioning of NWN

- Service requirements

Arthur D Little

Focus group participants evidenced a wide variety of information/ messaging needs which exist while away from home/office

- Sales, prospect, client and product information
- Messages from office
- Electronic mail
- Correspondence
- Faxes
- Search capability
- Minutes of meetings
- Budget information
- Business reference material
- Names, addresses, and phone numbers
- News reports (including Nexus, trade news, local news, stocks, farm reports, libraries)

- Local information (restaurants, entertainment, tickets for sporting events, theatre)
- Travel-related information (maps, directions, airline schedule and reservations, late arrival information, phone numbers)
- Doctor's file on medications, medical condition, glasses
- Banking information (balance)
- Hobbies and sports information
- Weather
- Legal reports
- Blueprints
- Social schedule

Arthur D Little

Participants also pointed to numerous locations and situations where information is needed

- While at home
- Away from the office while in town
- Traveling out of town
- In meetings
- On a sales call
- On a train
- While waiting for documents to arrive

- Emergencies (theft, medical)
- When you lose things
- Missing planes
- Unplanned schedule changes
- When there is "downtime"
- When people are not "reachable" by phone
- At trade shows

Arthur D Little

Without being exposed to NWN concept, participants "brainstormed" a number of ideas regarding an "ideal system" for addressing messaging needs – small and lightweight, considerable functionality and reasonable prices were key elements of an "ideal system"

Small and Lightweight Terminals	

• Portable
  – Fit in a briefcase
  – Battery-operated
  – Long battery life	

Considerable Functionality	
• Might, or might not, need to plug into a standard phone • Can get a response in minutes (real-time data access not required) • Can transfer information to a computer • Modular components (to upgrade)	• Be able to do some processing of information • Secure • Can view or print out a fax • User friendly (easy to learn, limited reading required) • Voice recognition • Printing capability
Reasonable Prices	
• Reasonably priced in the range of a PC • "Cheap" access, but cost more than phone lines per month	

Arthur D Little

We asked focus group participants to provide a comparative evaluation of service capability packages which resembled

- Nationwide Wireless Network

- Skytel Skystream

- Data Over Cellular

- ARDIS/RAM Offerings

In the absence of pricing, NWN is substantially preferred on a relative scale for messaging

0	16.5	37.2	48.7	64.3	82.7	100
	No New Service	ARDIS/ RAM	Skytel Skystream	Data Over Cellular	NWN	
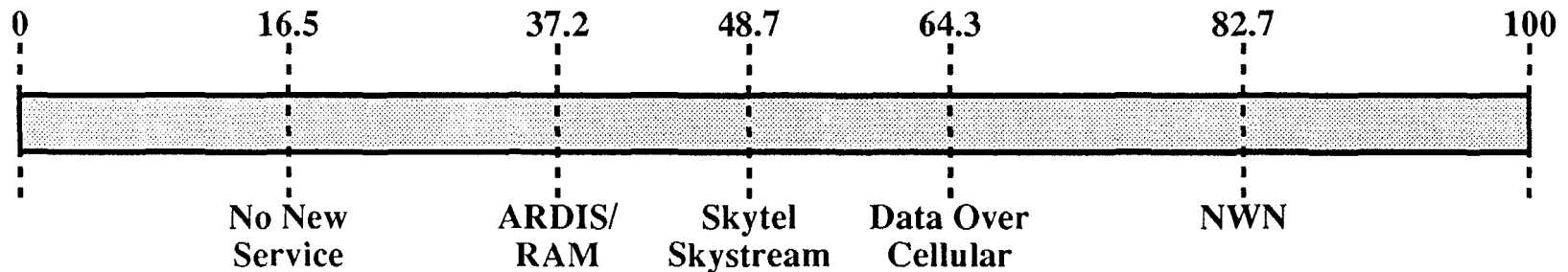
Two-way messaging capability and long battery life were elements in preference – In focus groups, functionality of the services were described without roaming service providers

Arthur D Little

The preference for NWN is strengthened when pricing is taken into account

- Skytel Skystream grows in value when pricing is displayed

- Data over cellular and ARDIS/RAM evidence a decline in relative value when their higher pricing is taken into account

| 0 | 15.5 | 26.0 | | 56.3 | 60.2 | | 96.8 | 100 |

No New   ARDIS/   Skytel   NWN
Service   RAM   Skystream
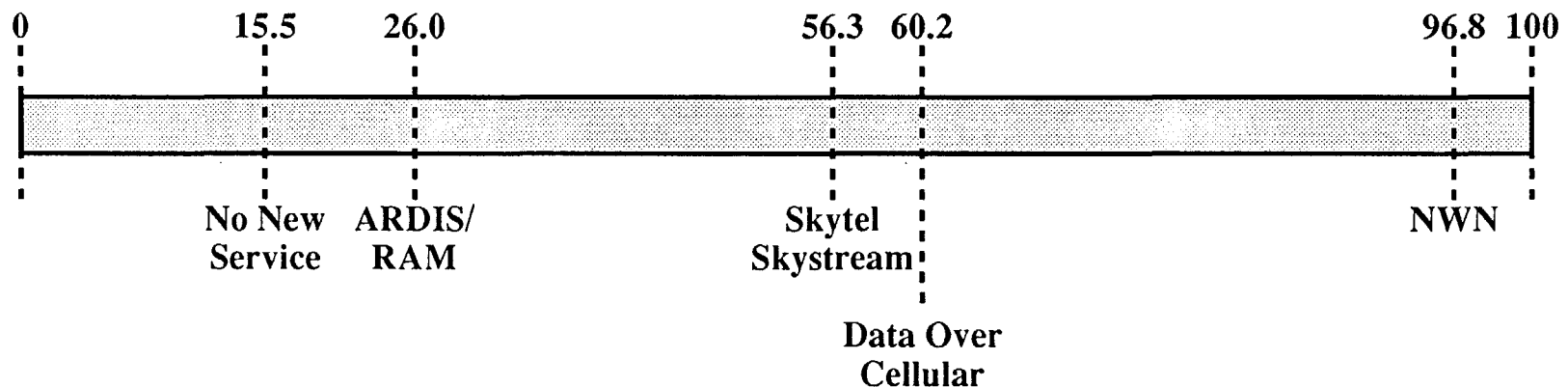
Data Over
Cellular

	ARDIS/RAM	Skytel/Skystream	Data Over Cellular	NWN
Average Monthly Pricing	$75 to $125	$50	$75 (including Voice)	$75
Modem/Radio Pricing	$1,500	$150 to $200	$650	$300

Focus group participants reported that they are likely to use the NWN service:

- Any time they are away from their offices

- In the local metropolitan area as well as outside the metropolitan area

- For both business and personal applications

Arthur D Little

In terms of geographic coverage, potential users suggested that nationwide coverage was most appropriate for meeting their messaging requirements:

- A number of participants traveled out of town on business

- Their travel patterns varied considerably and were not confined to a traditional geographic definition of a region of the country (e.g., Midwest, Southwest) – For example, one potential user reported traveling to California and Oklahoma, while living in Chicago

Arthur D Little
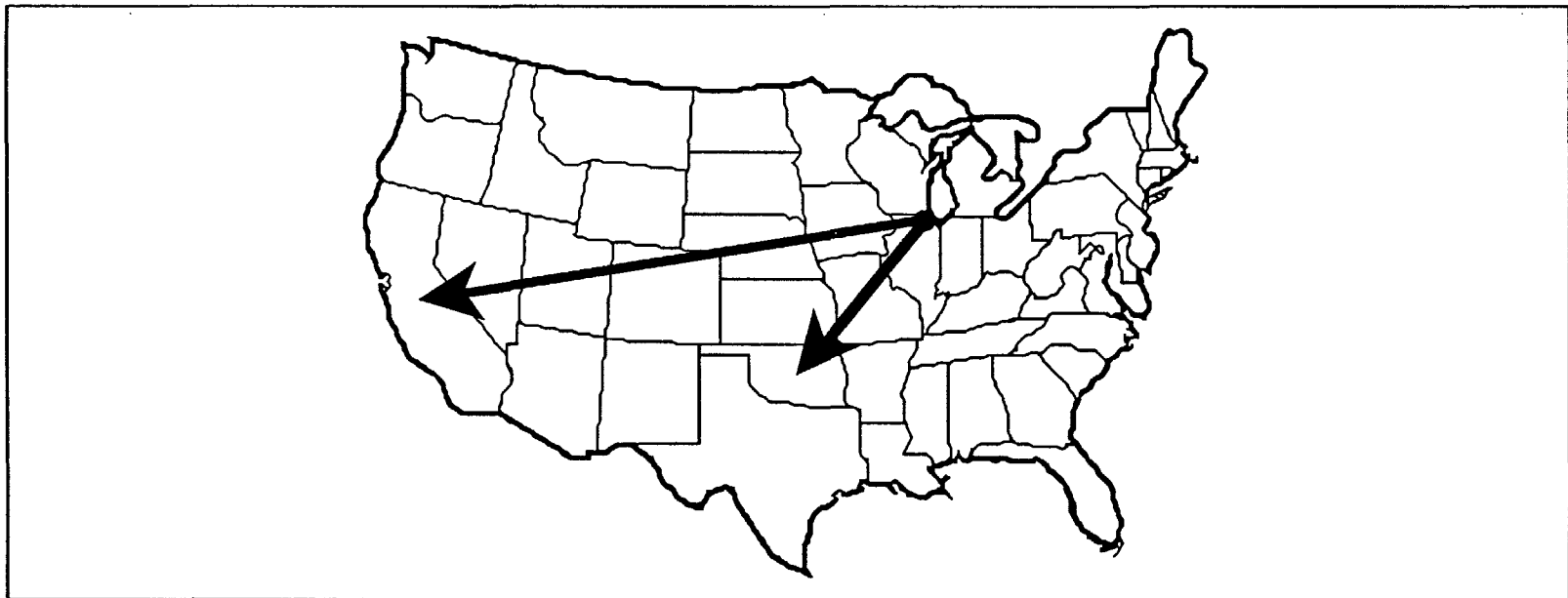
Potential users suggested that the size of the messages they were likely to send/receive would be quite modest – less than two pages in length

- Those few individuals who wished to send longer messages suggested that they would be likely to send a short message to identify their requirements for information and then use more efficient means at a later time (using telephone lines) to provide for larger messages or files

Survey findings are representative of the population of all U.S. households (94 million households) and reflect:

1. Demand for NWN offering

2. Message traffic and message length

3. An overall preference for nationwide service

Arthur D Little

To forecast demand for NWN, we used an adoption model developed by Frank Bass to predict purchase of new products

- The model was rooted in early literature on diffusion of innovation in agricultural settings

- The underlying principle is that the adoption curve follows a consistent path which varies as a function of time

- Models have successfully been applied to a variety of consumer and industrial products
  - CB radios
  - Cellular telephones
  - Electric refrigerators
  - Air conditioners
  - Color TV sets

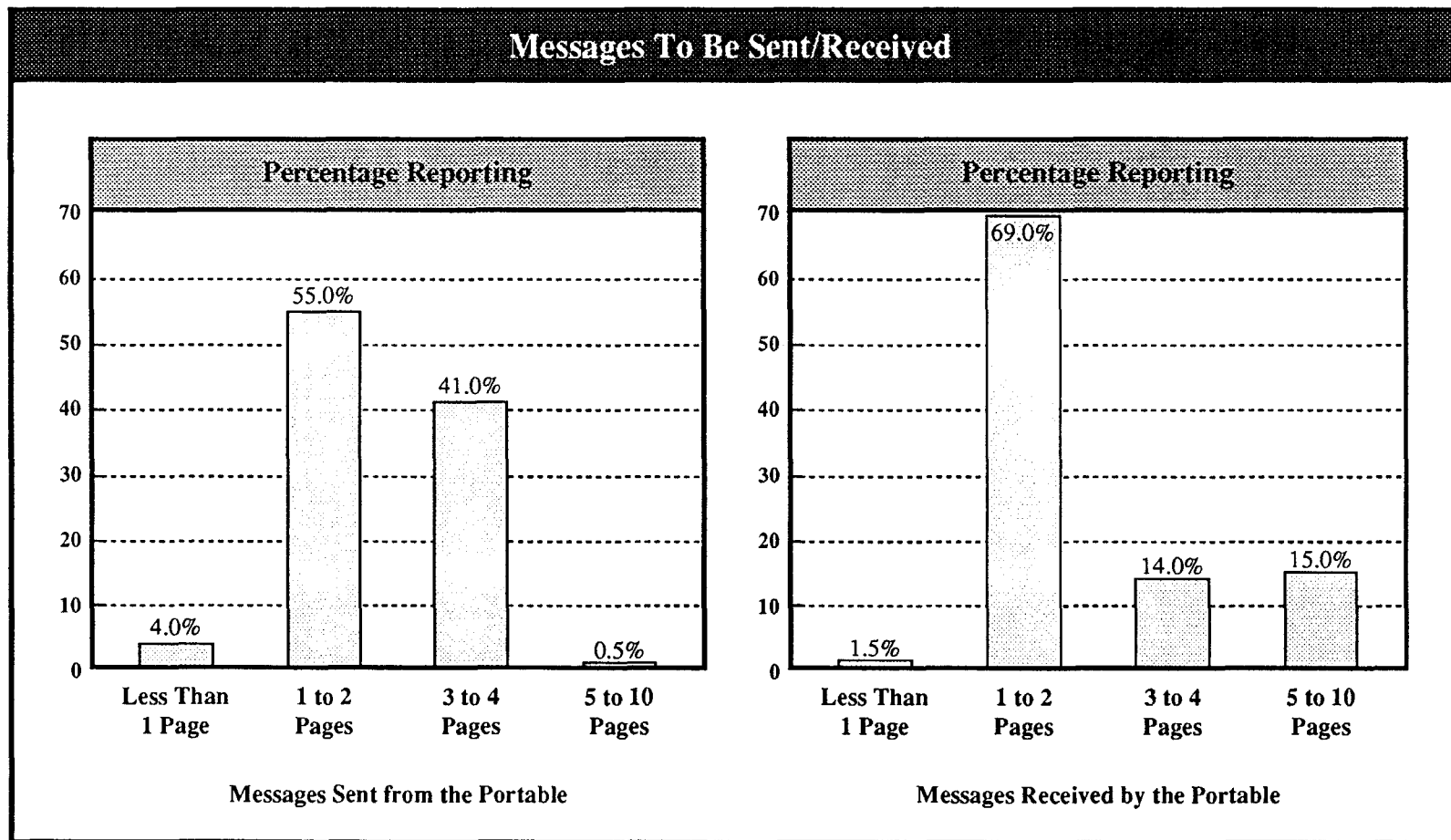| 2.5%	13.5%	34%	34%	16%
Innovators	Early Adoption	Early Majority	Late Majority	Laggards

Arthur D Little
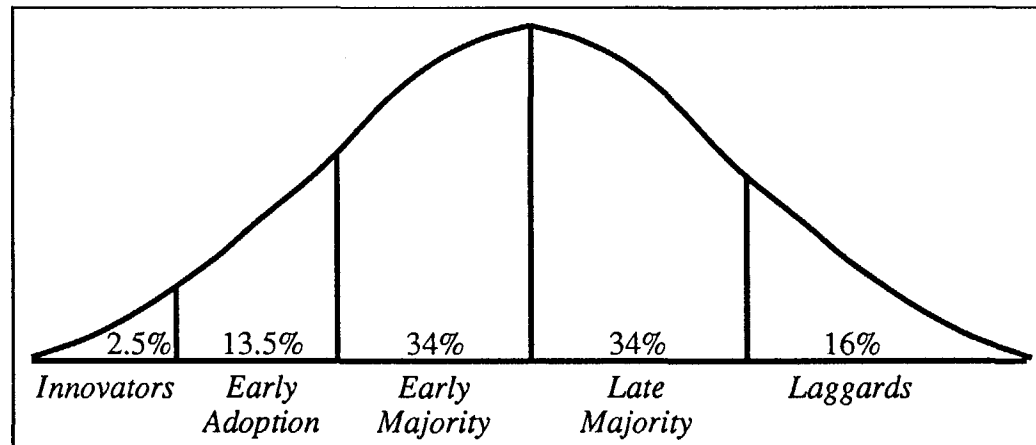
Bass adoption curves were developed for two groups of markets – the top sixty MSAs and the top one hundred MSAs – market estimates range between 923,000 and 1,047 million units after five years (for all three hundred MSAs, the estimate is 1.26 million units)


Likely Buyers (000s)

Top 100 Markets   — — — — — • Top 60 Markets
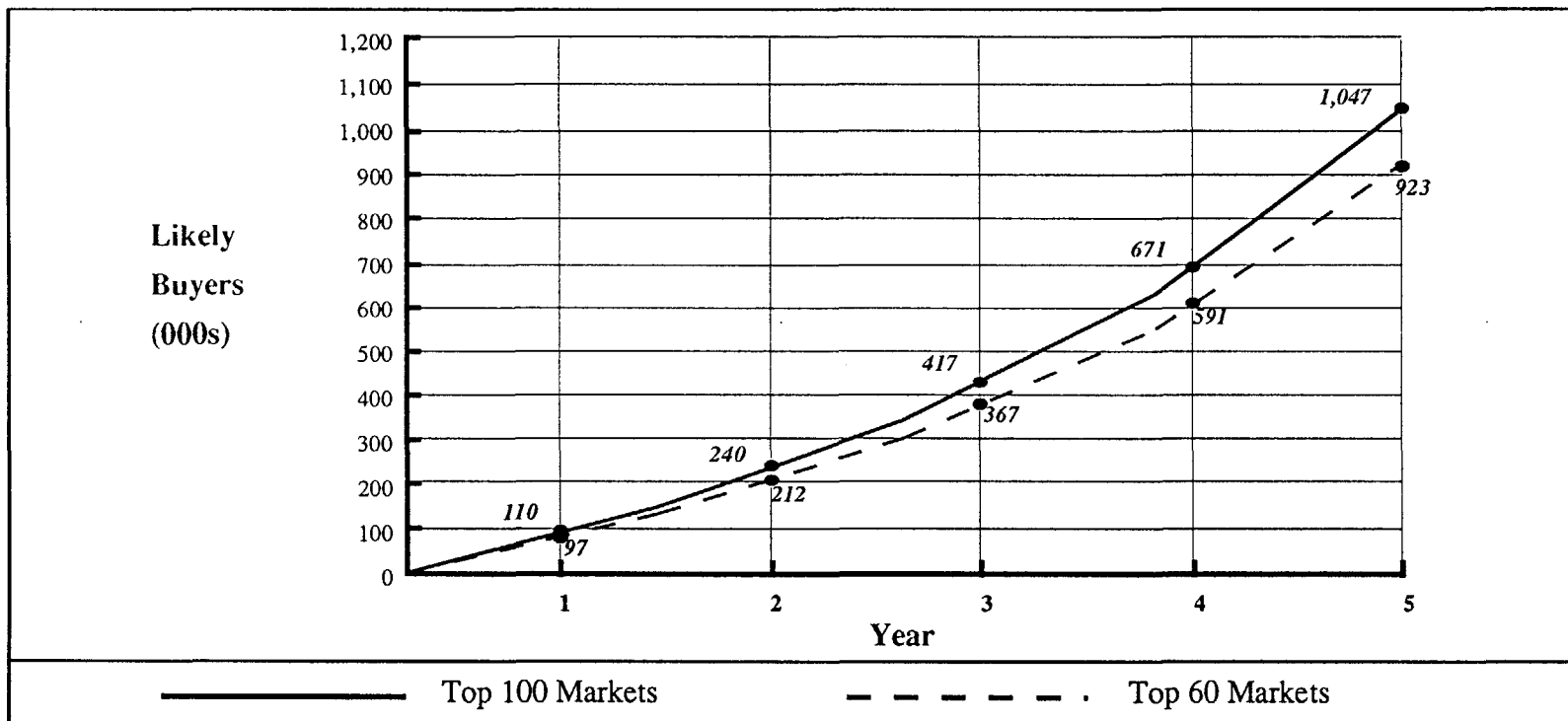
Conservative assumptions were made for market estimation purposes – one subscription per household – only eighty percent of those indicating they would "definitely" subscribe were counted

Arthur D Little

Prospective users anticipate sending and receiving relatively short messages using the portables

Messages To Be Sent/Received

Percentage Reporting (left chart)
- Less Than 1 Page: 4.0%
- 1 to 2 Pages: 55.0%
- 3 to 4 Pages: 41.0%
- 5 to 10 Pages: 0.5%

Messages Sent from the Portable

Percentage Reporting (right chart)
- Less Than 1 Page: 1.5%
- 1 to 2 Pages: 69.0%
- 3 to 4 Pages: 14.0%
- 5 to 10 Pages: 15.0%

Messages Received by the Portable

Arthur D Little

Average number of expected messages is over five messages to be sent from the portable and five messages to be received using the portable each work day


Messages Sent

(Average = 29 Per Week)

Messages Received

(Average = 25 Per Week)

Arthur D Little
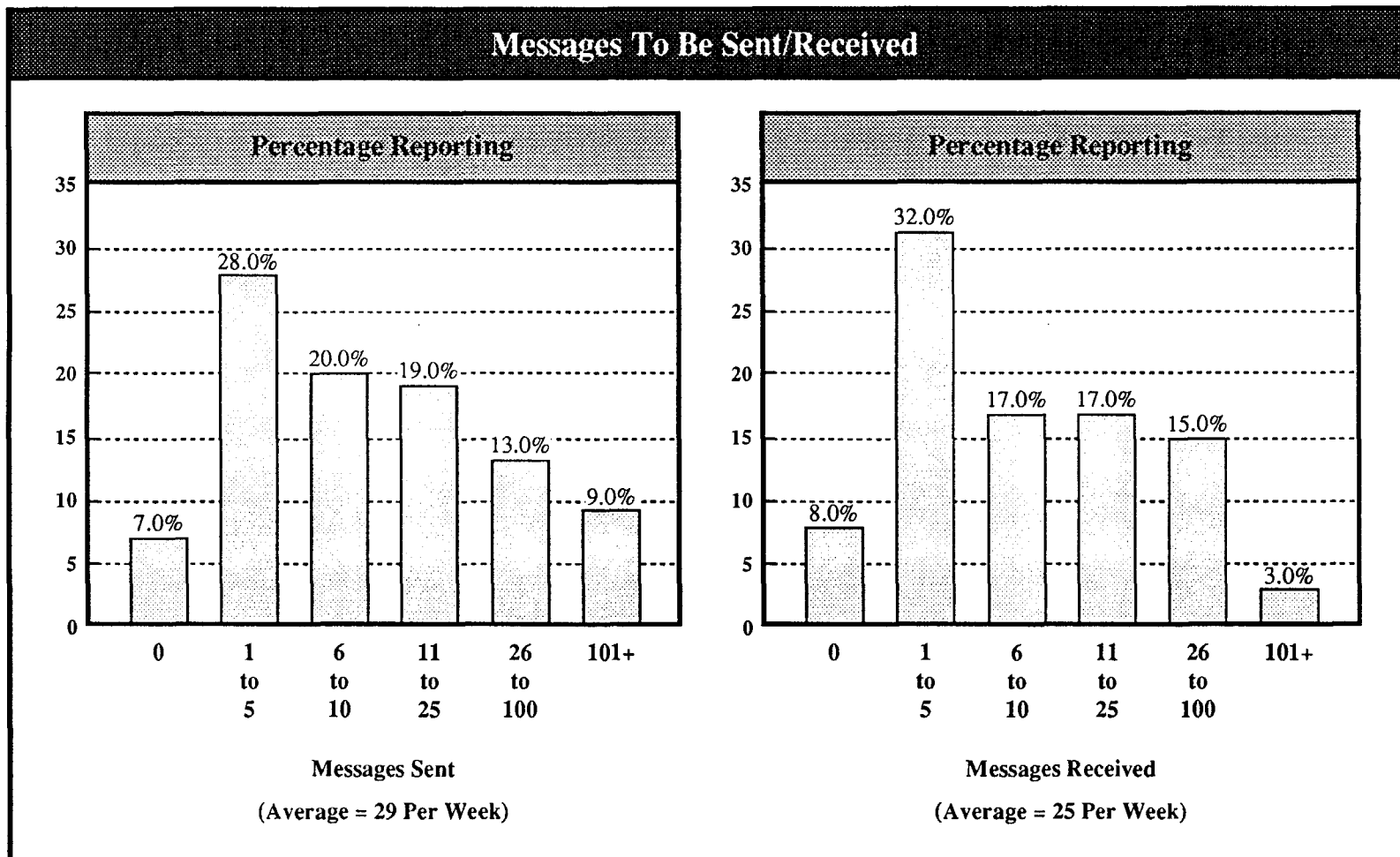
Nationwide coverage is preferred at a statistically significant level (p < .05) among potential adopters of NWN
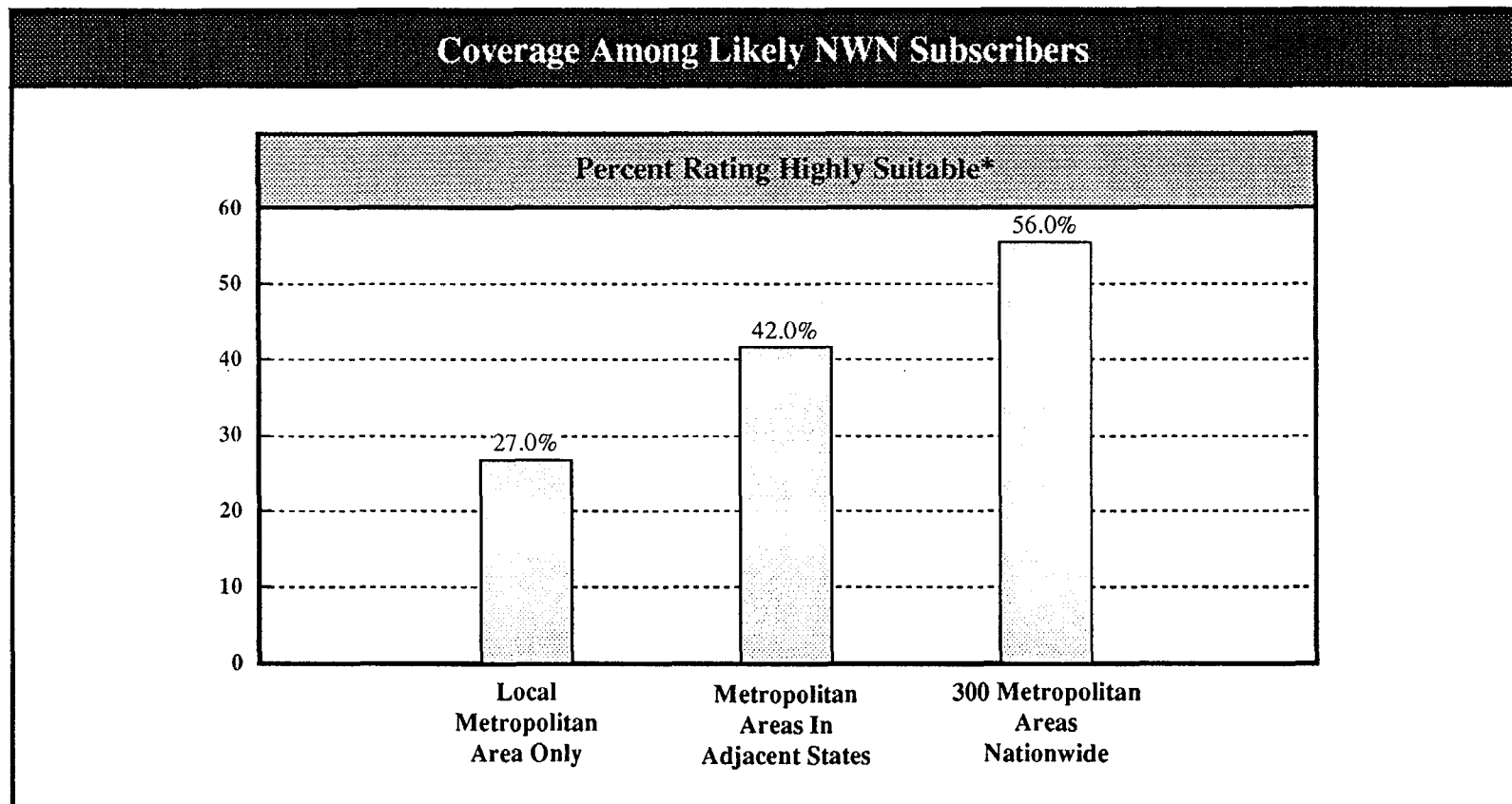

* Ratings of eight, nine, or ten on a ten-point scale

Ownership or use of personal organizers and PCs of various kinds has no statistically demonstrable influence over interest in NWN
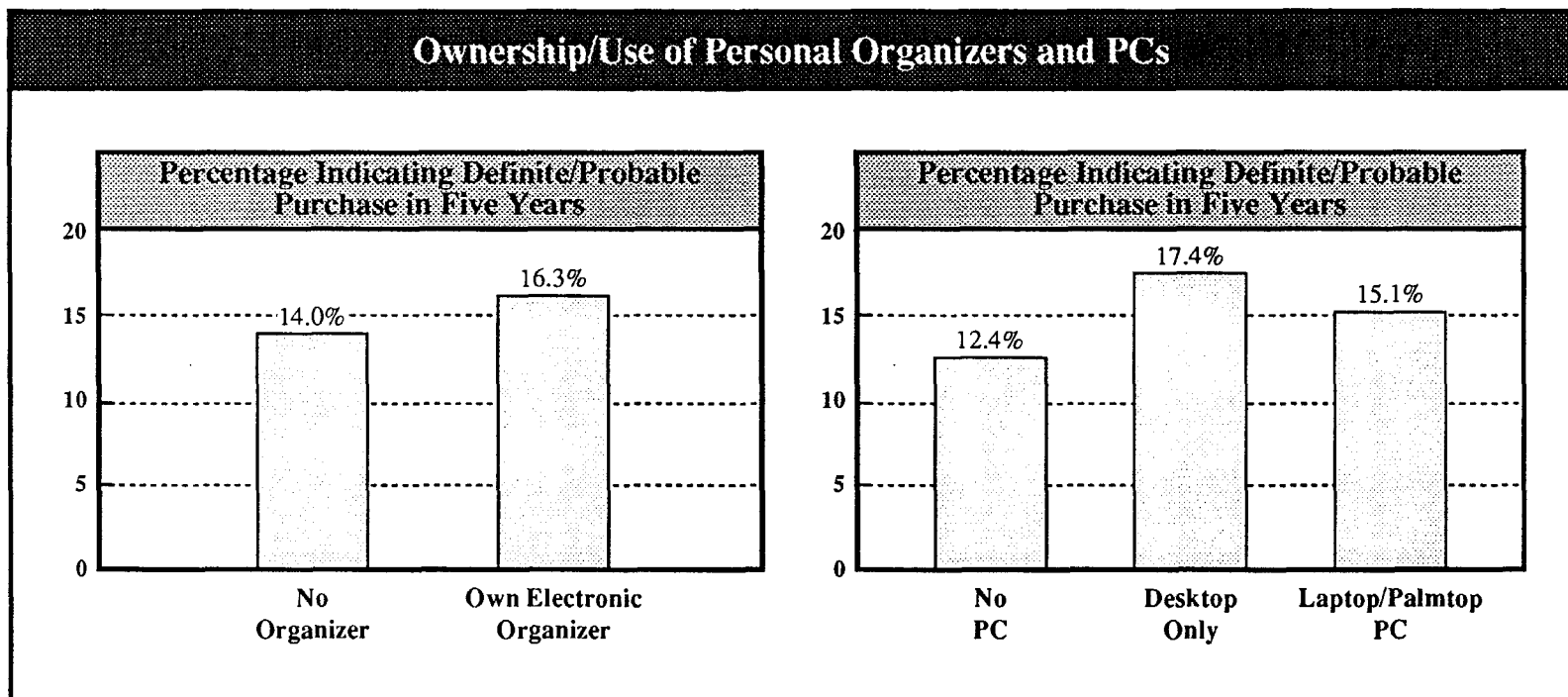
NWN purchase interest is presumably driven more by underlying communications needs

Those having experience with other wireless services are more likely to acquire NWN – they have a demonstrable mobile communications requirement
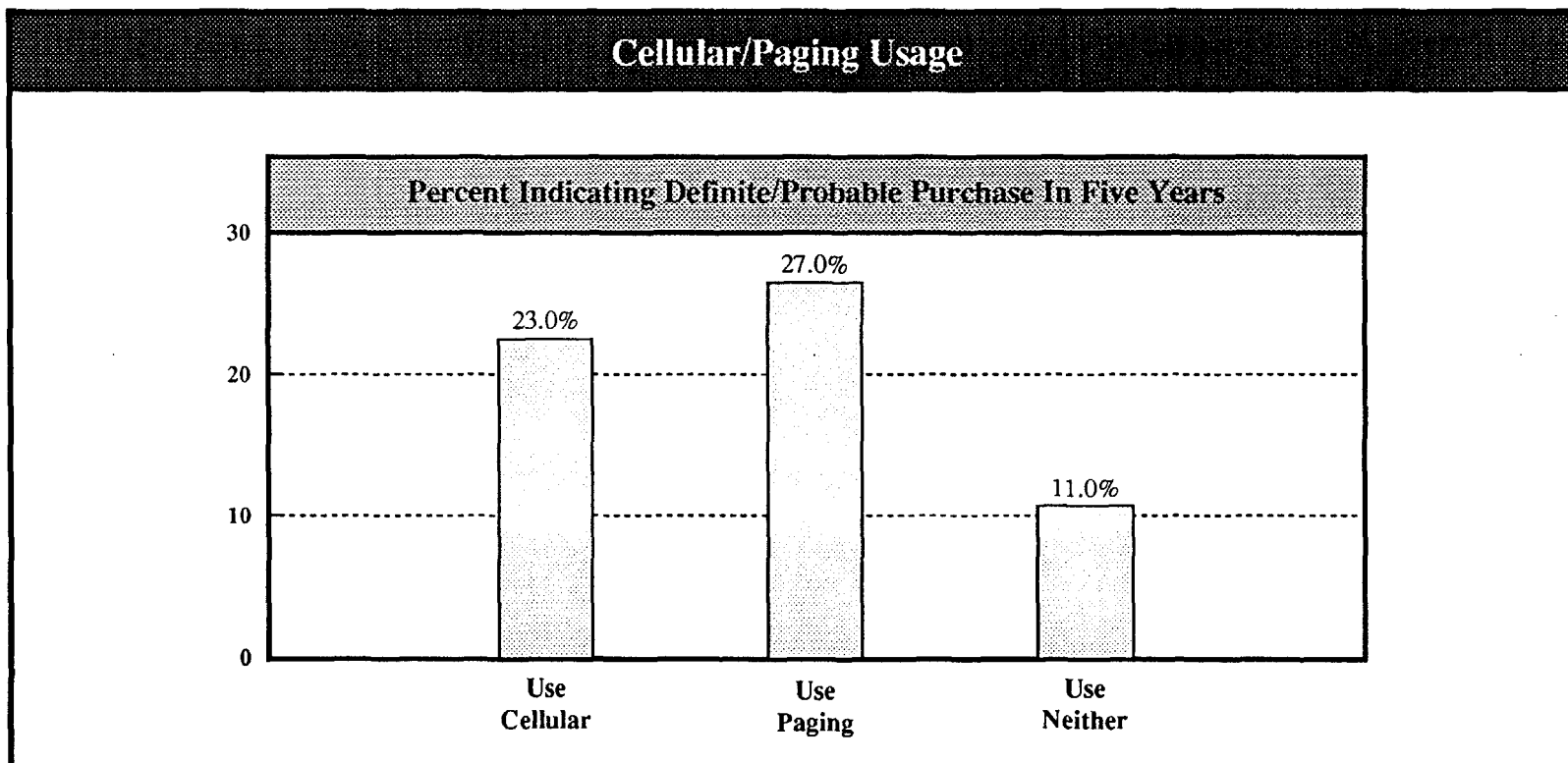
Research does not tell us directly whether NWN will displace cellular and/or existing paging services

Arthur D Little

The results from the nationwide survey suggest the following:

1. There is substantial demand for NWN-type offerings (between 923,000 and 1,047,000 units) if provided in either the top sixty or the top one hundred markets. To the extent that complete coverage of all Metropolitan Statistical Areas is possible, potential demand is even greater.

2. Users appear to have relatively modest message length requirements. Typically, messages will be one or two pages in length; only infrequently will messages of up to ten pages in length be required.

3. Users expect to send an average of 29 messages per week and receive 25 messages per week.

4. Among likely subscribers to NWN offerings, nationwide coverage is significantly preferred to services which offer only local or regional coverage.

5. In the price range tested ($60 to $90 per month) potential buyers were insensitive to price.

Arthur D Little